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DATAMATION 86

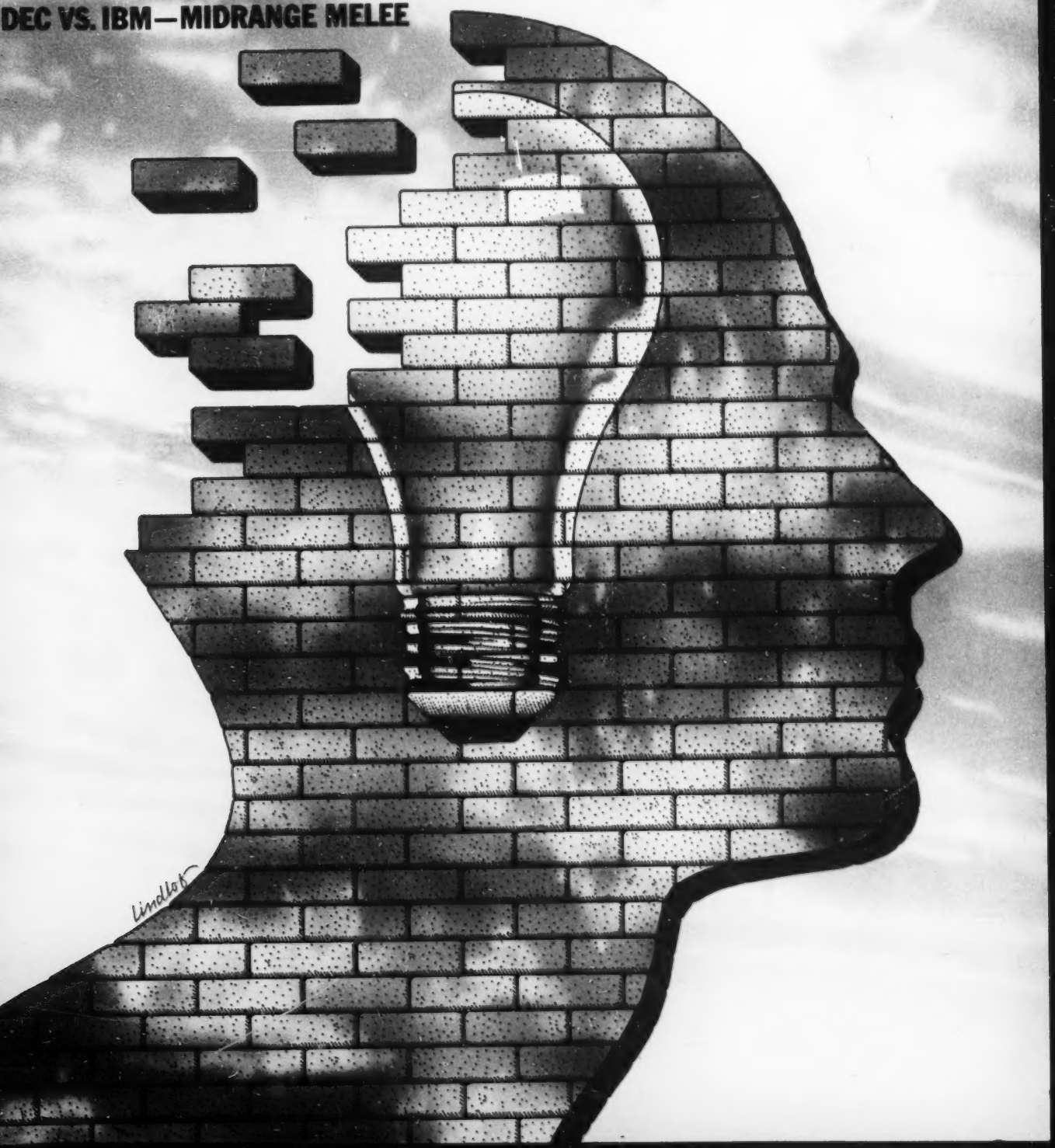
INTERNATIONAL EDITION AUGUST 1 © TECHNICAL PUBLISHING

BUILDING ARTIFICIAL INTELLIGENCE... IN THE LAB, IN THE MARKETPLACE

PLUS:

THE TOP 25 EUROPEAN DP COMPANIES

DEC VS. IBM—MIDRANGE MELEE



DATAMATION

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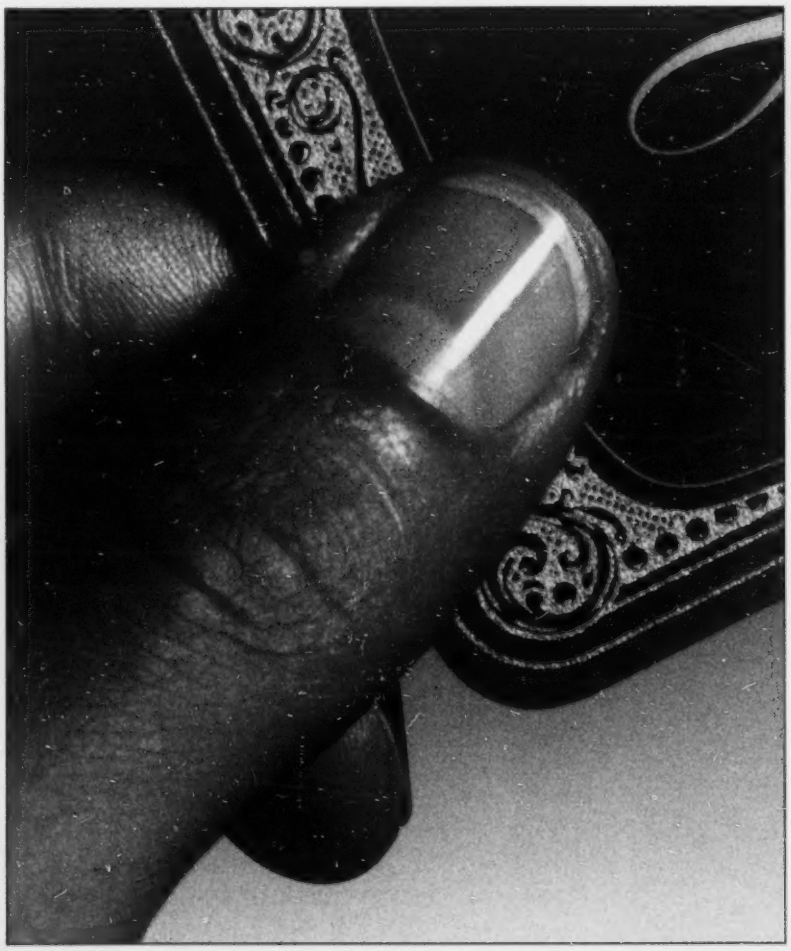

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LETTERS

DEVIL'S DUE

I was delighted to read "Is It Real, or Is It 'Information,' " by John W. Verity (May 15, p. 23). It provides a welcome change in our professional fare.

I urge you to open space in your magazine for what I would call a "devil's advocate" corner. Too many views and articles in the past have been almost exclusively on the positive, selling side of our exciting technology. We are still paying for having accepted these views too readily.

The problems that society has in coping with computers and communications are new, the future hard to predict. A dialog in the devil's advocate corner of your Readers' Forum would help to clarify the issues and positions and it might lead to a more effective use of our hardware, for the benefit of society.

JACEK KRYT
Willowdale, Ontario

WHAT HAPPENED?

I found "Whatever Happened to Structured Analysis?" by Ed Yourdon (June 1, p. 133) amazingly downbeat on the subject of structured design and analysis. Our department is currently in the process of implementing standards, and I had hoped that the article would provide support for my efforts to incorporate Yourdon's methods into them. Instead, the article has made me more conservative about pushing for structured methods in the organization.

RICHARD BARTHOLOMEW
Data Systems Division
General Dynamics
North Kingstown, Rhode Island

THOU SHALT NOT . . .

Your excellent editorial, "Let Not History Lead the Leader," (May 1, p. 19) omits the Fourth Commandment of Standards Making:

IV. Thou shalt not let national variations prevail.

The standards world has a unique opportunity to establish truly global standards if Lincoln Faurer and the Corporation for Open Systems work closely with the European SPAG (Standards Promotion and Application Group) to ensure the emergence of a single set of standards. This opportunity comes only once in the history of an industry—it must not be thrown away!

P.O. GERSHON
Director, Network Systems
International Computers Ltd.
Basingstoke, Hants
England

DISTRACTING

As I was distributing mail for our branch, I came across the June 1 issue of DATAMATION and was disgusted at the cover. The pornographic display of people wearing bikinis has no relevance to the contents of the magazine. Not only does it distract the unexpecting men, but it does not do justice to the image of your magazine. I would like to strongly encourage your company to be more cautious about taking negative liberties.

H.J. RHEE
Greenbelt, Maryland

We did not mean to distract or insult any of our readers, only to symbolically describe Las Vegas, the site of this year's National Computer Conference.—Ed.

ANOTHER MEASURE

Omri Serlin's otherwise excellent "MIPS, Dhrystones, and Other Tales" (June 1, p. 112) on the vagaries of performance measurements on RISC machines fails to mention one of the most popular and widely used benchmarks in that area: the "Livermore Kernels." A version of them was probably first used to characterize the performance of that famous RISC machine, the CDC 6600.

The following quote, taken directly from that program's comments, seems quite appropriate: "Throughput is measured in units of floating point operations per microsecond, called . . . megaflops. The MFLOP is a measure of the necessary results in a scientific application program regardless of the number or kind of operations or processing. The ratio of MFLOPS for two different machines will approximate the ratio of through-puts for the majority of compute-limited scientific applications on the two machines."

The author goes on to differentiate between the "necessary mathematics" (floating point results) and procedural machine instructions which are "artifices of an architecture." All MIPS quotations, Dhrystone or otherwise, contain to varying and largely indeterminate degrees, elements of this artifice.

W.H. GRAY
Idaho Falls, Idaho

CORRECTIONS

Owing to errors made during the editing of Omri Serlin's "MIPS, Dhrystones, and Other Tales" (June 1, p. 112), Herman Goldstine's name was misspelled and the location of the U.K.'s National Physical Laboratory was misidentified. It is in Teddington, Middlesex.

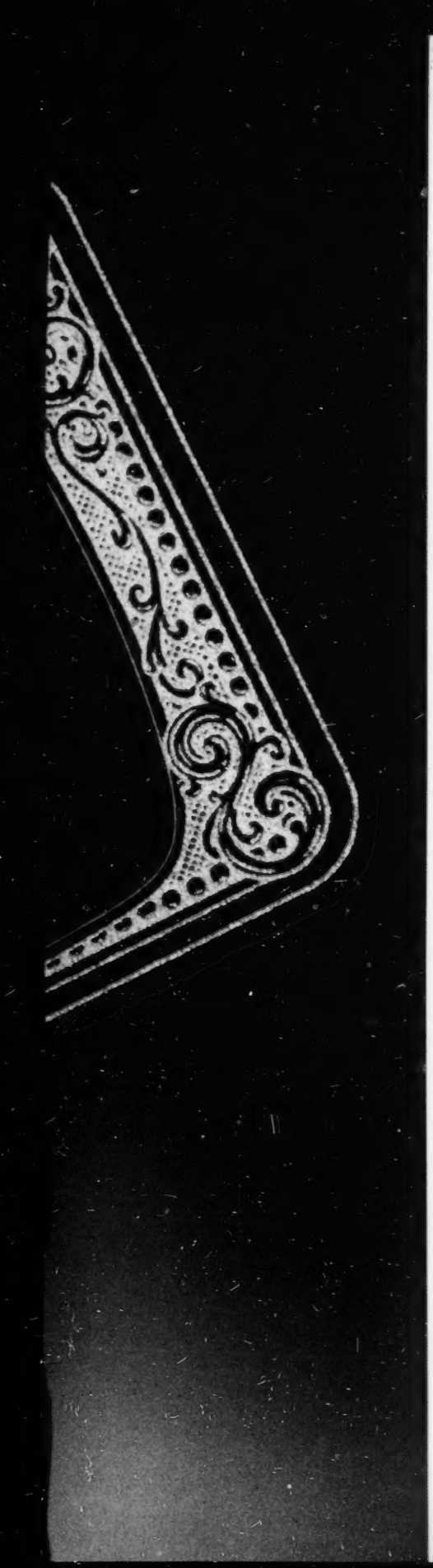
Following publication of this article, Mr. Serlin has learned that the internal IBM technical report on the Gibson Mix was indeed published in 1970 (to document the work IBM staffer J.C. Gibson did on the IBM 650 and 704 machines over 10 years earlier). Mr. Serlin wishes to thank Steve Schlesinger of NCR for his help in resolving this matter.

In the profile of Atlantic Computers plc (June 15, p. 149) in the DATAMATION 100, the company's total revenues were described as its dp revenues; the company's dp revenues were £175 million as reported in the charts.

In the profile of Digital Equipment Corp. (p. 66), the company was described as the "first major vendor to endorse the seven-level OSI architectural standard . . . ." In truth, DEC was the first major *U.S.* vendor to do so.

Twenty-five top companies qualify for membership in the Continent's most prestigious computer club.

EUROPE'S ELITE



by Paul Tate and Linda Runyan

While Americans beefed about a slump, economic conditions on the Continent beefed up the 1985 revenues of Europe's leading data processing companies: the top 25 companies in the European market last year had revenues totaling $34.5 billion, up 21% in dollars over the year before.

As usual, the revenue range between the first- and last-place firms is very broad. Top-ranked IBM pulled in a staggering $13.4 billion, while bottom-rung Atlantic Computers chalked up $219.5 million in 1985 European computer sales. As was the case in our 1984 survey, Big Blue's European dp sales represented 39% of the combined revenue total.

The European dp market, which has always experienced more modest but steadier growth than the U.S., suffered much less in 1985 from the so-called slump in the computer business. This is reflected in the healthy 21% jump in combined revenues of the top 25 companies. Recent market surveys indicate that the European dp business grew by more than 15% last year to well over $40 billion; the combined revenues of the DATAMATION European 25 account for 86% of the European computer business.

One area that did especially well was software and services. According to the European Computer Services Association (ECSA), the European computer services and software business in 1985 was worth $15.4 billion, up 22% over the previous year. Breaking this down, packaged software soared 32%, custom software and consultancy grew 23%, and processing services inched up a modest 10%.

West Germany spent the most on data processing during 1985, followed by the other major markets in the U.K., France, and Italy.

The strong market in Germany helped the country's leading dp company, Siemens, hold on to the number two position in the 1985 ranking, with revenues of $2.8 billion. At the bottom of the chart, the names of the members may have changed, but the $219.5 million revenue threshold for membership in the top 25 club stayed almost the same as in 1984.

DRAMATIC DISPARITY REVEALED

Once again, DATAMATION's European ranking reveals the most dramatic disparity in revenues between the 13th and 14th positions. Holding its same 13th place slot is NCR, which posted a greatly improved 27% gain to $932.5 million. Falling far behind NCR in this revenue race is another American company, Honeywell, whose lower 6.9% increase to $487.9 million earned it notch number 14.

The 11 companies that fall below Honeywell are also once again closely clustered together on the DATAMATION European 25 chart, which cuts off at Britain's Atlantic Computers. That company recorded a spectacular 94.4% boost in European dp sales. Honeywell also appeared to be the biggest mover on the chart, vaulting five places to the number 14 spot. Honeywell's hike, however, is somewhat misleading. If the Minneapolis company had reported its complete 1984 European dp revenue to DATAMATION, it would have indeed ranked in the same 14th-place position it captured in our 1985 survey.

Four of the chart climbers rose two notches each in our ranking: BASF, Burroughs, Nixdorf, and Philips.

Three American companies fell the farthest on the DATAMATION European 25 chart. California company Hewlett-Packard plummeted five places to number 12 on an 8.1% revenue gain to $992.2 million. Another California concern, Apple Computer, nosedived five places to rank 23rd, on a decline of 27.7% in revenue to $227.9 million. And Commodore dropped four places to 19th on the ranking. Also slipping badly was the U.K. company Plessey, down four slots to 24th place.

There was more repositioning apparent on the 1985 chart. Five companies stayed in the same place, as opposed to six in 1984. Those companies were NCR, STC (ICL), Groupe Bull, Siemens, and IBM, which remained firmly entrenched in the numero uno position. The most stability in

CALLIGRAPHY BY RAY BARBER, PHOTOGRAPH BY STEVE COOPER

positioning comes again at the very top of the ranking. For the third year in a row, West German giant Siemens held on to its coveted second-place slot behind behemoth Big Blue. U.S. minicomputer maker Digital Equipment Corp. swapped places with Italian dynamo Olivetti to capture third place. This is the highest the Massachusetts mini maker has ever risen in DATAMATION's European 25.

DEC as well as other stateside system sellers took advantage of the more favorable economic and market conditions across the Atlantic. This is also reflected in the ranking, which once again for 1985 is dominated by the American contingent. The U.S., with a dozen dpers, has more companies on the chart than any single European country. The Yankee brigade pulled in $22 billion in European dp revenue, which represents 63.5% of the combined top 25 total. Adding to those American sales in Europe was survey newcomer Prime Computer Inc. Slipping off the chart for 1985 was Data General, which held last place in the 1984 ranking.

The European coterie, which includes 13 companies from six countries, had combined sales of $12.5 billion, almost half of the American total. Included in the European fold are four firms each from West Germany and Britain, two from France, and one each from Sweden, Italy, and the Netherlands. Fifteenth-place British Telecom, which had revenues of $455.1 million, is a new entrant to the top 25. Returning to the ranks of the European elite is Compagnie Générale d'Electricité, which scored $431.1 in European dp sales. The French firm moves back onto the chart because of the consolidation and restructuring that has gone on within the CGE group. The business systems and communications branches of CGE and Thomson were merged into a new CGE subsidiary, Thomson Alcatel.

DIDN'T QUITE MAKE IT

The European company that fell off the chart in 1986 was Rank Xerox, which took in revenues of $216 million. In our 1985 survey, there was heated competition for the last-but-not-least spot. Rivals for that 25th position included Finland's Nokia, a near miss at $217.6 million, Amdahl at $215.5 million, and, of course, Rank Xerox at $216 million.

Seven European companies that are on the list of firms with the largest worldwide dp sales are not on the DATAMATION European 25 because their European computer revenues fall below the $219.5 million cutoff point. Those companies are Racal,

FIG. 1

LEADING EUROPEAN DP COMPANIES

	COMPANY	COUNTRY	WORLD-WIDE DP REV ($ MIL)	% CHG ACTUAL ACCTG. CURRENCY
1	**Siemens AG**	W. Germany	$3,265.0	20.8
2	**Ing. C. Olivetti & Co. S.P.A.**	Italy	2,637.7	42.4
3	**Groupe Bull**	France	1,794.5	18.5
4	**N.V. Philips**	Netherlands	1,365.6	13.4
5	**Nixdorf Computer AG**	W. Germany	1,339.9	20.5
6	**STC plc**	U.K.	1,330.8	10.0
7	**L.M. Ericsson**	Sweden	1,232.8	14.1
8	**Compagnie Générale d'Electricité**	France	479.0	10.3
9	**British Telecom plc**	U.K.	455.1	NA
10	**Volkswagen AG**	W. Germany	452.9	19.7
11	**Racal Electronics plc**	U.K.	380.8	–14.7
12	**BASF**	W. Germany	357.1	23.5
13	**Mannesmann AG**	W. Germany	355.7	7.0
14	**Ferranti plc**	U.K.	282.1	10.3
15	**Rank Xerox**	U.K.	270.0	13.4
16	**Plessey Co. plc**	U.K.	250.0	10.3
17	**Cap Gemini Sogeti**	France	245.1	22.2
18	**Atlantic Computers plc**	U.K.	224.4	94.4
19	**Norsk Data AS**	Norway	219.8	38.8
20	**Nokia Corp.**	Finland	217.6	24.2

FIG. 2

IBM EUROPE'S MAJOR MARKETS

COUNTRY	1985 TOTAL REV ($ MIL)	% CHANGE IN ACC*	INTER-CO. TRANSFER ($ MIL)	LOCAL SALES REV ($ MIL)	1985 NET INCOME ($ MIL)
France	$4,183.4	13	$1,920.2	$2,263.2	322.1
W. Germany	4,500.0	17	1,693.5	2,806.5	289.8
Italy	2,241.5	17	707.0	1,534.5	250.3
Netherlands	1,032.5	26	356.3	676.2	100.6
Spain	1,128.9	38	519.9	609.0	128.8
Sweden	846.4	25	354.1	492.3	66.2
U.K.	3,901.3	30	2,028.2	1,873.1	394.9

All figures include typewriter sales, which have been deducted from DATAMATION European 25 chart.
*Actual accounting currency

METHODOLOGY

For this survey, Europe includes Austria, Belgium, Denmark, Finland, France, West Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, and the U.K.

Dp-related revenue is defined as general purpose dp products and services generated by one or more of the following categories of equipment: mainframes, minicomputers, office systems, data communications, peripherals and terminals, software and services, and maintenance and repair. Excluded are data transmission or "basic" services revenues from specialized common carriers, standalone electronic and mag card typewriters and standalone electronic cash registers, instrumentation, semiconductors, printed circuit boards, automated test equipment, and dp supplies, with the exception of magnetic media for disk and tape drives. All peripherals that attach to a system are included. For computer-based manufacturing systems, such as computer-controlled machine tools, only computer and hardcopy output devices are included and not the tools themselves.

All revenue and earnings figures have been adjusted to calendar year calculations. All European company figures were converted to U.S. dollars, using OECD exchange rates.

THE DATAMATION EUROPEAN 25

1985 RANK	1984 RANK	COMPANY	HEAD-QUARTERS	1985 EUR DP REV ($ MIL)	% CHG $ U.S.	% CHG AAC*	TOTAL DP REV ($ MIL)
1	1	International Business Machines	U.S.	$13,440.2	18.0	18.0	$48,554.0
2	2	Siemens AG	W. Germany	2,775.2	16.9	20.0	3,265.0
3	4	Digital Equipment Corp.	U.S.	2,179.1	34.5	34.5	7,029.4
4	3	Ing. C. Olivetti & Co. S.P.A.	Italy	1,862.8	23.4	34.8	2,637.7
5	5	Groupe Bull	France	1,668.8	15.4	18.5	1,794.5
6	8	Nixdorf Computer AG	W. Germany	1,192.5	16.7	20.5	1,339.9
7	9	Burroughs Corp.	U.S.	1,124.4	19.0	19.0	4,685.3
8	6	L. M. Ericsson	Sweden	1,097.1	8.5	12.8	1,232.8
9	11	N.V. Philips Gloeilampenfabrieken	Netherlands	1,078.2	28.4	24.2	1,365.6
10	10	STC plc	U.K.	1,038.0	10.0	14.4	1,330.8
11	12	Sperry Corp.	U.S.	1,020.0	41	41	4,755.1
12	7	Hewlett-Packard Co.	U.S.	992.2	8.1	8.1	3,675.0
13	13	NCR Corp.	U.S.	932.5	27.0	27.0	3,885.5
14	19	Honeywell Inc.	U.S.	487.9	6.9	6.9	1,951.9
15	—	British Telecom	U.K.	455.1	NA	NA	455.1
16	14	Wang Laboratories Inc.	U.S.	437.0	NC	NC	2,428.3
17	—	Compagnie Generale d'Electricite	France	431.1	NA	NA	479.0
18	16	Control Data Corp.	U.S.	423.0	12.8	12.8	3,679.7
19	15	Commodore International Ltd.	U.S.	397.5	−4.0	−4.0	750.0
20	17	Mannesmann AG	W. Germany	320.1	3.0	7.0	355.7
21	23	BASF	W. Germany	282.1	33.3	37.4	357.1
22	—	Prime Computer Inc.	U.S.	238.6	37.5	37.5	769.7
23	18	Apple Computer Corp.	U.S.	227.9	−27.7	−27.7	1,753.8
24	20	Plessey Co. plc	U.K.	225.0	−13.8	−10.3	250.0
25	—	Atlantic Computers plc	U.K.	219.5	87.0	94.4	224.4

NA: not available; NC: no change *Actual accounting currency

Ferranti, Nokia, Norsk Data, Rank Xerox, Cap Gemini Sogeti, and Volkswagen AG, the parent of West Germany's Triumph Adler.

Many other European companies had something to shout about last year too. France's Bull went into the black after years of losses, Britain's STC crossed the 1 billion mark in pounds sterling, and the long-standing dp and communications divisions of the Dutch Philips group merged. It was also the first full year of operation for the newly financed British Telecom (BT), the U.K.'s national telephone authority. During its first year in the private sector, the firm earned enough in the dp and private digital communications markets to qualify it for 15th place in the DATAMATION European 25 ranking. Making its debut there, BT had one of the strongest profit pictures in the industry during 1985. According to the DATAMATION 100, British Telecom has the fourth-highest net return on sales worldwide. IBM is one position lower (see "The DATAMATION 100," June 15, p. 42).

Even so, IBM had a good year in Europe during 1985 with mainframe sales buoyant and personal computers dominating all the national markets. Last year, IBM's European revenues, which were up 18%, accounted for 27.7% of the company's worldwide sales. That was the first increase since the '70s. Each of its major European subsidiaries showed strong growth rates, especially in the U.K. and the fast-expanding markets in Spain and the Netherlands (see Fig. 2).

SIERRAS POPULAR IN EUROPE

Last year, the Sierra mainframes were much in demand in Europe, a demand that benefited both IBM and leasing companies like DATAMATION European 25 newcomer Atlantic Computers. The U.K. firm had taken orders for 12 IBM 3090 systems by year-end.

IBM's relationship with the leasing industry as a whole worsened, however. The European Computer Leasing Association (Eclat) filed a complaint with the country's office of fair trading practice over IBM Germany's abuse of its dominant market position. The investigation is still under way.

At the lower end of the business, IBM established itself as a clear winner in the European micro field. Market surveys give IBM more than one third of the professional pc business. Meanwhile, Olivetti, with 11% of the market, knocked Apple out of the number two spot. Since the general purpose pc market is well supplied, European pc makers are customizing micros for more specialized applications. Olivetti and Philips, for example, have introduced or are preparing products that integrate such technologies as voice, compact disk, magnetic card readers, and high-resolution graphics. This wave of applied microcomputing is an inevitable result of the more conservative pc purchasing attitudes in Europe, where buyers want to automate specific jobs to cost-justify their investments.

While the big folks in pcs battled it out for market share, other European micro makers were suffering from market fallout last year. According to a U.K. National Computing Center report, around 30% of Britain's micro firms dropped out of the market in Britain in 1985. But even more new suppliers set up shop, and overall the number of pc suppliers in the U.K. was up 11% last year.

TOTAL DP REV % CHG ($ MIL)	1985 TOTAL REV ($ MIL)	EUR DP REV AS % OF TOTAL DP REV	DOM REV AS % OF TOTAL DP REV	DP REV AS % OF TOTAL REV	NET INCOME ($ MIL)	1985 EMPL	FISCAL YEAR END
9.6	$50,056.0	27.7	64	97	$6,555.0	405,535	Dec.
17.0	18,574.9	85	50	18	519.7	348,000	Sept.
12.8	7,029.4	31	60	100	400.6	91,000	June
31.0	3,215.9	71	36	82	250.0	48,944	Dec.
15.3	1,794.5	93	64	100	12.3	26,403	Dec.
16.7	1,339.9	89	50	100	58.5	23,290	Dec.
4.1	5,037.7	24	49	93	248.2	60,500	Dec.
9.8	3,779.3	89	28	33	38.7	78,000	Dec.
9.6	18,065.6	79	NA	8	276.8	345,600	Dec.
5.7	2,560.6	78	59	52	-69.0	51,600	Dec.
18.4	5,526.8	30	56	86	37.4	67,000	March
8.0	6,505.0	27	58	56	489.0	84,000	Oct.
5.8	4,317.2	24	55	90	315.2	62,000	Dec.
6.9	6,624.6	25	70	29	281.6	94,022	Dec.
NA	10,504.2	100	100	4	1,341.1	232,000	Dec.
0.2	2,428.3	18	69	100	-63.3	31,000	June
7.3	8,908.7	90	NA	5	111.4	155,000	Dec.
0.3	3,679.7	11.5	82	100	-567.5	44,300	Dec.
34.7	798.6	53	42	94	-237.2	NA	June
3.7	448.1	90	41	79	87.1	107,804	Dec.
19.7	15,092.6	79	NA	2	NA	130,173	Dec.
19.7	769.7	31	NA	100	57.8	8,115	Dec.
-7.5	1,753.8	13	77	100	72.0	4,182	Sept.
-13.7	1,862.0	90	NA	13	104.0	37,533	March
87.0	234.8	98	NA	96	21.2	500	Dec.

The broader office automation market in Europe also has a number of problems to overcome. When the U.K. consultantcy, Langton, asked 360 major European companies to list their problems with OA, 36% complained they were unable to link their equipment because of deficiencies in existing systems. While the solution seems to be more applicable standards of connectivity and compatibility, 69% of those surveyed said they wouldn't wait for standards to be set before buying.

CUT DOWN WAITING TIME

European vendors and standards organizations are trying to cut down that waiting time. In 1984, European manufacturers were the first to form a Standards Promotion and Applications Group (SPAG) to support the OSI networking standard. SPAG included Siemens, ICL, Bull, Olivetti, Philips, and Ericsson. Last year, the Japanese picked up the OSI standards banner, forming their own SPAG, and the U.S. responded with the Corporation for Open Systems (COS). Many U.S. companies, including IBM, Digital, Data General, and Burroughs, are also using European sites for OSI development.

Toward the end of 1985, the European Computer Manufacturers Association (ECMA) invited IBM to contribute its LU 6.2 interface standard used in SNA to be part of an OSI recommendation to the International Standards Organization. Earlier this year, however, ECMA abandoned the idea after further study of the technical and commercial drawbacks.

X/Open, another vendor consortium, also got under way last year in Europe. The group is aimed at establishing a commercial base for Unix. Founding members Nixdorf, Siemens, Bull, ICL, Olivetti, and Philips were later joined by Ericsson, DEC, and Sperry. Part of the motivation for these standards moves is the fragmentation of the European market. Unifying the technical requirements may help to overcome some of the problems of diversity. In the past, those problems have led to the existence of more smaller companies than in the U.S. These firms are often tied to their home bases and have less competitive attitudes. Non-European vendors still dominate the Continent's information technology industry, resulting in a trade deficit of roughly $12 billion in 1985.

The picture is rosier in the telecommunications industry, where Europe ended the year with a $1.4 billion trade surplus. This, however, hides the fact that Europe's trade balance with its major competitors is worsening. Last year, Europe's telecom trade deficit with the U.S. was up 29% to $657 million, and with Japan it was up 61% to $580 million, according to Michel Carpentier, director general of the EC's Task Force on Information Technologies and Telecommunications.

European vendors are beginning to respond intelligently to these challenges and, thanks to a continued buoyancy in the market, they have the opportunity to expand. What may dim their ardor is the greater emphasis that U.S. companies are putting on European revenues in the face of stepped-up Japanese competition in a duller-than-usual home market. What DATAMATION's 1986 ranking should reveal is just how successful the Europeans have been in brightening the data processing prospects on their own home turf. ◉